The ten chapters cover the subject of animal growth factors comprehensively. The first, headed General Concepts, presents a review of the evidence for stem cells and theories of cell growth and cell populations. In the second, Molecular Regulation of Cell Production, the relationship between proliferation and differentiation is discussed. The third chapter, on haemopoietic cells, explores details of the origins of mature haemopoietic cells and discusses the assays for progenitors. Haemopoiesis has been a focus of intense study of growth factors and chapter 4 discusses blood cell regulators in detail. Chapters 5 and 6 deal with epithelial cells and epithelial growth regulators. Epithelial cell growth kinetics and differentiation are reviewed and epidermal growth factor and growth factor receptor discussed. Chapter 7 provides a comprehensive review of the commitment and proliferation of mesodermal cells and includes discussion of fibroblastic growth factor and platelet derived growth factor. Chapter 8 deals with nerve cell growth and differentiation and chapter 9 is devoted entirely to nerve growth factor. In the final chapter, Perturbing Proliferation, the authors consider abnormal growth; tumour growth factors and the relationships between oncogene products and growth factors are discussed.

An unfortunate penalty of being an early arrival in a fast-moving field is that already parts of this book are slightly out-of-date. For example, it was published before the relationship between v-erbB and the gene for epidermal growth factor receptor had been reported. Moreover, the genes for many growth factors have been cloned and sequenced since it appeared. This is no criticism of the book; rather it is an inevitable consequence of the very rapid movement of the field. Indeed, for those who are trying feverishly to catch up, this is a first rate compendium of background information and (apart from some minuscule illustrations) it is well written. The bibliography in each chapter provides an excellent introduction to the literature up to 1983.

J. Paul

The Dynamic Body Tissues

by W.S. Bullough

MTP Press; Lancaster, 1983

189 pages. £17.95

When first introduced, chalone concepts provided an attractive model for tissue homeostasis. Subsequently they have been dogged by criticism of interpretation, methodology and concept. Although this book provides a philosophical and historical treatise on chalones it does little to accommodate varying shades of opinion, or answer criticisms that must inevitably arise twenty five years later. The central theme is of biochemically elusive compounds – the G_1 and G_2 chalones and the mesenchymal factor that interact to provide the main controlling influences in homeostasis, aging and in the pathogenesis of neoplasia. The author's convictions are forcefully presented but scientific evidence is meagre. Instead, hypothesis is heaped upon hypothesis to stretch the reader's credulity to breaking point. Criticisms are contemptuously dismissed or ignored; references appear to be carefully chosen to bolster Bullough's views and at least one has been extensively reworded for this purpose. This approach is especially obvious in the chapter on the role of chalones in carcinogenesis where such 'supportive' references are gleaned from the 1930's.

The book is peppered with scientific errors – thick epithelia with high mitotic rates can indeed be arranged into cell columns (filiform papillae); recent concepts of epithelial proliferative hierarchies and stem cells are ignored; epithelial cells can proliferate in vitro where the effect of the pro-

mitotic mesenchymal factor is presumably minimal; studies on skin, tongue and intestinal epithelia suggest mitosis is not the driving force responsible for cell migration; the statement that cell divisions occur in intestinal crypts because "the mesenchymal factor concentration may be higher" is typical of the superficial arguments used. The obvious retort that surely mesenchymal factor is also present in villous connective tissues so why don't epithelial cells divide there, is lost in the chalone mystique the author tries to generate. How would he explain surface cells in mouse vaginal epithelium undergoing mitosis (low mesenchymal factor, high chalone levels, therefore no divisions); 'basal' cells in junctional epithelium sitting on tooth enamel, yet capable of undergoing DNA synthesis (well away from the connective tissue and mesenchymal factor, high levels of chalone, therefore no divisions), or vincristine-arrested mitoses migrating suprabasally in tongue epithelium. The original 'critical experiments' on mouse ear which were published in 1960 are mentioned, in eleven, almost throwaway lines. No data are presented to permit the benefit of 25 years hindsight. Unpublished, therefore unchallengeable data are heavily quoted including the statement that chalone has been extracted "even more significantly from human urine" (1971, unpublished).

I feel there is indeed a role for inhibitors in homeostasis but the dogmas and hypotheses that leap uncritically from each page with almost suffocating abundance do little to enhance the chalone cause and this will surely be regretted by the few workers remaining in the field.

W.J. Hume

Positional Controls in Plant Development

Edited by P.W. Barlow and D.J. Carr

Cambridge University Press; Cambridge, 1984

xii + 502 pages. £45.00, $79.50

The concept that information possessed by a cell in consequence of its position within a tissue can somehow define the course of differentiation of that cell has been developed and formalised by several workers in animal biology. This book brings together similar views that positional information can also guide the development of form and structure in plants. Such ideas have been scattered throughout the literature and have been discussed by many workers on plant development for a number of years. It is therefore not only timely but also encouraging that a comprehensive work on the subject should now be published.

The book contains contributions from 18 workers in the field and covers 16 topics ranging from the positional control of differentiation and development of individual cells and tissues to cell groups and organs such as leaf primordia, and shoot and root apices. Consideration is also given to the role of positional information in the development of algae, fungi and bryophytes together with discussions on its role in long-range effects in vascular plants. Perhaps significantly, there is only one chapter which is critical of the positional control theory in developmental processes and here the importance of structural epigenesis is emphasised as an alternative approach.

Apart from obvious differences with regard to the tissue type used, the approach adopted by different contributors is very varied and the range of phenomena discussed covers macromolecular interactions and ultrastructure through to long-range interactions between organs. In addition to using the results from a wide range of experimental techniques in some chapters mathematical ap-